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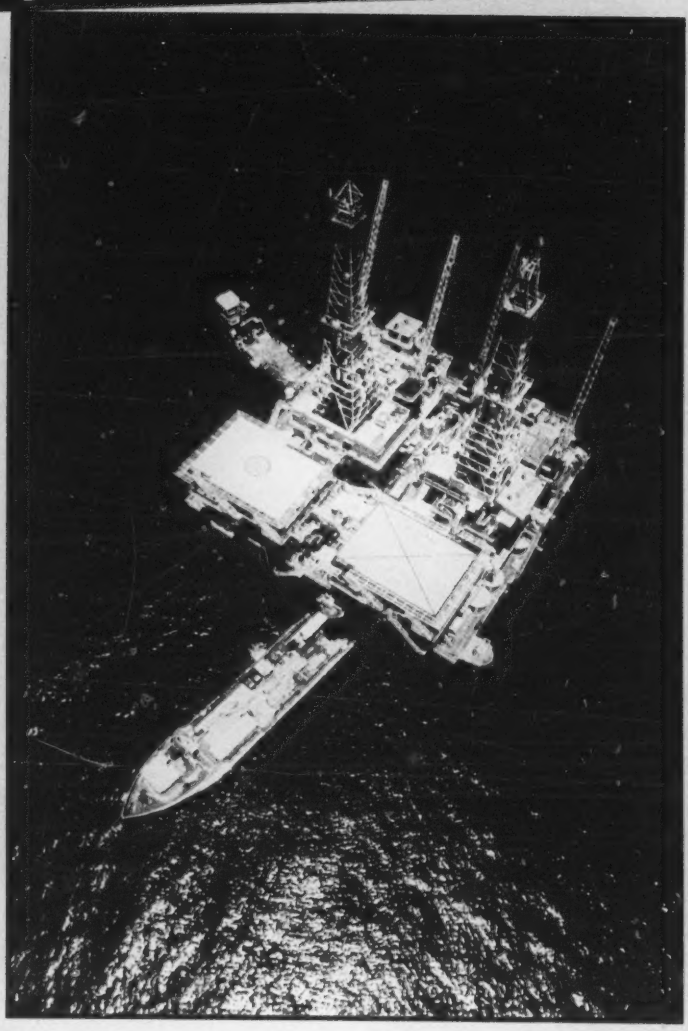


National Energy Outlook to the Year 2000

July 1982

Preface

Shell's energy outlook is developed by relating economic and social directions to patterns of future energy consumption and supply. Such a projection, of course, is dependent upon assumptions concerning probable social and political change, economic developments, and the possibility of technological improvements.

Shell considers the assumptions upon which this outlook is based to be reasonable, but no one can anticipate what actually will happen between now and the year 2000. Some events and policies that we now expect may fail to materialize, and other unforeseen events take place. However, we believe the general direction of the energy future presented here, and the major issues it highlights, to remain valid.

Our current energy outlook shows that the nation's energy use will grow by 1 percent a year between now and the year 2000, significantly below historical levels. Even so, domestic energy supplies will not prove sufficient, requiring us to import the equivalent of 5.8 million barrels of oil and gas a day by the end of the century. Of that amount, 2 million barrels — about 35 percent — will come from sources in the Persian Gulf.

This outlook is based on three major premises: (1) the U.S. economy will grow at an average annual rate of 2.5 percent; (2) current laws and government policies will remain in place; and (3) moderately rising world energy prices will continue to slow the growth rate of overall energy demand.

Still, some developments will stimulate energy consumption. These include a 1 percent annual growth in population, the formation of new households, a rise in new car purchases, and an expansion in manufacturing.

U.S. ENERGY DEMAND BY MARKET

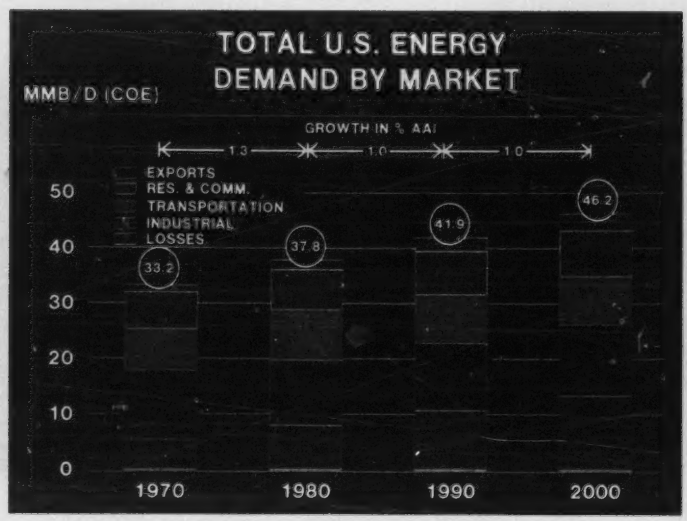
The transportation market constitutes 24 percent of the nation's total energy demand and 54 percent of its demand for oil. Demand within this market over the next two decades, however, will decline at an average annual rate of 0.2 percent, as automobiles and trucks continue to become more fuel efficient. Gasoline consumption will further be cut by a growing use of diesel fuel in cars. By 1990, transportation's share of energy demand is projected to fall to 19 percent, although its share of oil demand will climb to 59 percent.

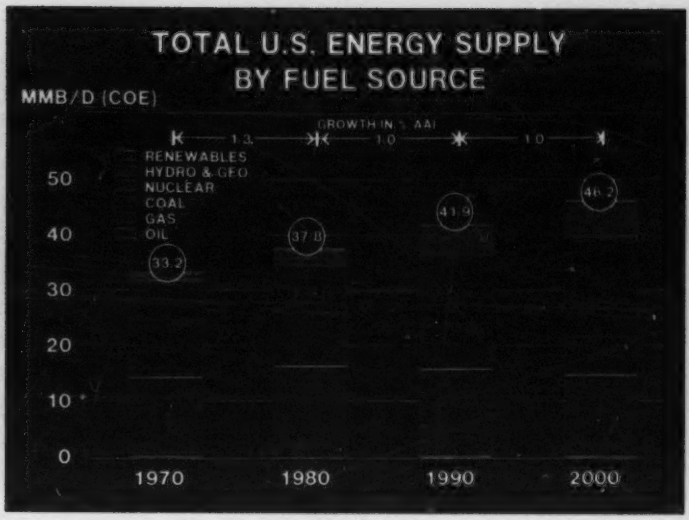
The residential and commercial market demand will increase by only 0.6 percent a year, due to more efficient energy use per household and per commercial employee.

Energy use by the industrial market will grow by 0.4 percent a year, due primarily to an expansion in manufacturing. This is less than the rate of growth in manufacturing output and reflects increased efficiency in energy use per unit of output.

Energy losses, the amount used in converting one fuel to another energy type (such as coal to electricity) will grow at a faster rate than total energy needs. This will occur because electricity sales will increase by 2.6 percent a year, a lower rate than in the past, but still faster than that for total energy use.

The nation's export coal market will expand significantly, contributing to a better trade balance.





U.S. ENERGY SUPPLY BY SOURCE

The volumes of oil and gas change very little between now and the end of the century. Almost all the growth in supply comes from coal. Consequently, oil's share of energy is projected to decline from 44 percent in 1980 to 32 percent in the year 2000; gas will fall from 25 percent to 15 percent. By 2000, coal will account for 39 percent of America's energy supplies.

Throughout the next two decades, coal will remain "demand limited;" that is, we will be able to produce more than the markets call for. Annual coal production by the year 2000 is expected to reach 1.7 billion tons.

The outlook is not so bright for nuclear energy, which we expect to be encumbered by regulatory problems, the high cost of capital and uncertainty in the growth of electric sales. However, it will show some expansion, eventually accounting for 8 percent of our total energy and 19 percent of our electricity.

Contributions to our energy supply from hydroelectric and geothermal sources will increase, but because those resources are limited, their overall contributions will be small.

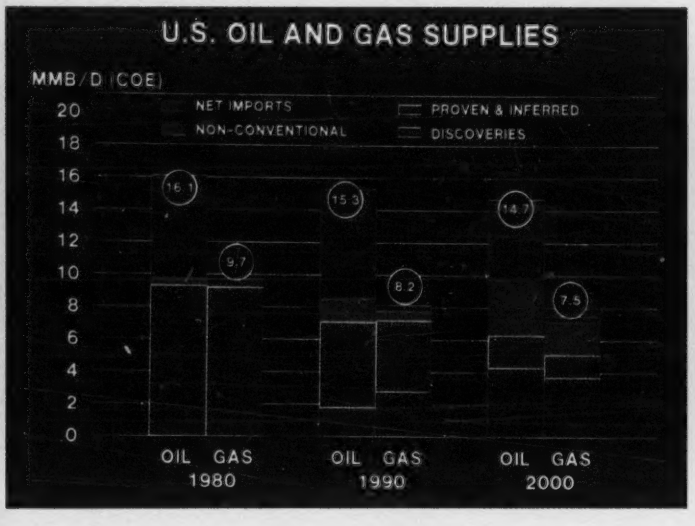
Technological advances will promote growth in renewable energy sources such as solar, biomass and wind. But because substituting these forms of energy for more conventional ones takes time, Shell projects they will account for only 3 percent of America's energy supply by the year 2000.

U.S. OIL AND GAS SUPPLIES

Over the next 20 years, the nation will experience only a moderate growth in energy supply and demand. Nevertheless, it is important to note that 47 percent of that energy will still come from oil and natural gas. Therefore, the future U.S. supply balance is based largely on significant new domestic supplies of oil and gas, be they from discovered reserves or non-conventional sources.

Approximately 40 percent of the oil and gas produced in the year 2000 will come from reserves yet to be found. We also expect to see about 30 percent of the nation's domestic oil and gas supplies to come from such means and resources as enhanced oil recovery, shale oil, gas from tight sands, and gas from coal conversion. The projections in this outlook are calculated on the basis that the Natural Gas Policy Act and the Windfall Profit Tax remain in place after 1985, although their repeal or favorable modification would significantly increase both oil and natural gas availability.

After assessing future world oil production and demand, Shell projects there will be enough foreign oil to meet our import requirements of 5-6 million barrels/day average over the period, barring international supply disruptions, political or otherwise.



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